

## CLAIMS

5        1.- A process for obtaining electrolytic manganese from ferroalloy manufacturing waste for any other industrial waste having magnesium in general, more specifically from the manganese contained in the washing sludges of the exhaust gases from ferromanganese and silicomanganese production furnaces, obtaining a high added value product, characterized in that it consists of an initial sulphation phase, a  
10       hydrometallurgical phase made up of four steps – lixiviation, primary purification, secondary purification and conditioning – and a last electrolysis phase, and in which:

A non-hazardous waste is made to disappear, producing another one of half the inert weight and having the property of being self-compactable.

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A thermal sulphation process with near-stoichiometric acid consumptions is used.

The removal of impurities, primarily of iron and aluminum, is caused primarily by pH control, minimizing the amount of equipment and time to be used.

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The removal of base metal impurities, mainly zinc, is caused by means of the precipitation thereof in the form of sulphurs suitable for other uses.

Which allows obtaining electrolyzed solutions which, in standard conditions, produce  
25       manganese with a 99.9% purity.

2.- A process for obtaining electrolytic manganese from ferroalloy manufacturing waste for any other industrial waste having magnesium in general according to claim 1, wherein the sulphation phase is characterized in that it is carried out in a furnace in

which exothermic reactions occur inside the furnace and on teflon trays, generating SO<sub>2</sub> gases.

5        3.- A process for obtaining electrolytic manganese from ferroalloy manufacturing waste for any other industrial waste having magnesium in general according to claim 1, wherein the lixiviation and primary filtration steps are characterized in that lixiviation is carried out with a consumed anolyte of the electrolysis cell or alternatively with a synthetic anolyte.

10       4.- A process for obtaining electrolytic manganese from ferroalloy manufacturing waste for any other industrial waste having magnesium in general according to claim 4, wherein said lixiviation step is characterized in that an anolyte is used as a lixiviation agent, and it is carried out with strong stirring in a reactor coated with antacid.

15       5.- A process for obtaining electrolytic manganese from ferroalloy manufacturing waste for any other industrial waste having magnesium in general according to claim 4, wherein the primary filtration step is characterized in that it is simultaneously carried out in the same reactor of the lixiviation until raising the pH of the pulp to values near neutral pH, and the resulting pulp is then subjected to filtering in a filter press and washing with water, preferably in the filter press itself, obtaining an inert waste.

20       6.- A process for obtaining electrolytic manganese from ferroalloy manufacturing waste for any other industrial waste having magnesium in general according to claim 6, wherein the washing water of the pulp is characterized in that it can be used as added water to the mixer in the initial phase of the process, or it can be re-used successive times to concentrate the manganese therein.